

## COMPOSITION AND METHOD OF USE

### Background Of The Invention

5

Mammal hair or fur grows in cycles and goes through three phases: anagen, catagen and telogen. In the anagen phase, hair is actively and continuously growing. Afterwards, hair goes through a short period of growth recess (catagen) and enters into telogen in which hair stops growing. The control of the hair growth cycle in mammals is poorly understood. Under normal conditions, it is predominantly controlled by photoperiod. For example, dogs and cats in northern United States shed mainly in spring and fall. Other factors such as genetics, nutrition, and hormones may also affect hair growth cycle.

15

Alopecia is an abnormal condition in mammals. It is defined as an absence of hair from areas of skin where hair normally is present. It could be due to loss of hair follicles or an abnormally extended telogen period after alopecia in the affected area. In the case of canine and feline, some alopecia are congenital and hereditary while others are caused by various abnormal conditions. The former can be seen in canine color mutant alopecia, feline alopecia universalis, pattern baldness of dachshund, etc. and the latter are generally called acquired alopecias such as canine and feline pinal alopecia, preauricular feline alopecia, anagen telogen defluxion, feline symmetric alopecia, and post-clipping alopecia.

25

Post-clipping alopecia is commonly seen in veterinary practice. Post-clipping alopecia can last for as long as 6 to 12 months after initial hair clipping. From time to time hair has to be removed or clipped, for example, prior to an operation the canine will be clipped along the area of incision so as to provide a clear field for the surgeon. Treatment of a skin condition oftentimes requires the clipping of hair around the affected area. Other occasions of clipping include venipuncture for drawing blood or

30

injecting medicine. In each of these situations there is a need to have hair growth occur in a rapid and nonselective manner. This will provide a smoothly integrated coat in as short a time as possible.

5 It has now been found that hair growth can be rapidly accelerated through the application of an alcoholic composition to the surface of the dog's skin. This appears to bring about a more rapid passage of hair growth from the telogenic stage to the anagenic stage or stimulating hair growth rate or both.

### 10 Summary Of The Invention

In accordance with the invention there is a liquid composition comprising an alcohol or mixture thereof in sufficient quantity to grow  
15 hair in an area of a canine or feline skin wherein alopecia has occurred.

Another aspect of the invention is a method for growing hair on the skin of a canine or feline following alopecia which comprises applying to the skin of the said dog the composition of the invention in quantities and  
20 frequency sufficient to grow hair following the said alopecia.

### Detailed Description Of The Invention

25 The alcohol(s) can be applied to the skin directly, or through contacting the skin with materials having absorbed alcohol such as cotton, gauze, sponge and cloth or through a vehicle used to deliver the alcohols to the skin surface. The vehicle is any liquid that solubilizes or emulsifies  
30 the alcohol(s), is easily spreadable on the skin and provides enough absorption of the alcohol(s) so as to provide the hair growing effect.

The alcohols can be used alone or in mixtures, applying directly to the canine or feline skin together with a vehicle or contacting material as

mentioned previously. Such alcohol includes mono or polyalcohols such as methanol, ethanol, isopropanol, propanol, butanol, ethylene glycol, propylene glycol, glycerin, polyethylene glycol, polypropylene glycols, ethylhexane diol, hexylene glycols, and the like, a blend of ethylalcohol with varying amounts of other water soluble alcohols, particularly methanol and isopropanol, or a mixture of methanol and isopropanol. Generally ethanol is a major portion by volume. A particularly desirable group of alcohols is ethanol with methanol and/or isopropanol. Generally about 75 to about 98 vol. % ethanol with the remainder being methanol and/or isopropanol is particularly desirable with about 80 to about 94 vol. % ethanol and about 6 to about 20 vol. % methanol and /or isopropanol, preferably the mixture of methanol and isopropanol being even more desirable. Quantities of specific alcohol(s) employed as well as frequency of use is dependent upon toxicity to the animal.

The quantity of alcohol(s) applied to the skin surface is that quantity of alcohol(s) which bring about a more rapid hair growth in comparison to non-treated skin. Generally, the treated skin should be fully covered with the alcohol or the alcohol mixture for a sufficient length of time, e.g., about 2 minutes. Removal of stratum corneum using materials such as D-Square sampling disc in the treated area before alcohol treatment can facilitate the penetration of the alcohol into the skin. The frequency of application can be once or twice every two to four weeks for up to six to nine months. The alcoholic treated skin appears to take hair from the telogenic stage of essentially nongrowth to the anagenic stage of growth or brings about more rapid hair growth.

A further use of the invention is as an animal model for studying the regulation of hair growth cycle in mammals through bringing hair growth into different growth phases, i.e., anagen, catagen or telogen, in a controlled manner.

## EXAMPLES

Below are examples of the invention showing the effect of the treatment on canine skin relative to untreated canine skin.

5

### Example 1

10        The alcohol mixture contained ethyl alcohol (90%), methyl alcohol (5%) and isopropyl alcohol (5%).

15        The affected skin was first stripped 36 times with D-Squame sampling discs (a skin sampling disc made by CuDerm Corp., Dallas, TX); each time with a new disc. A glass ring (id = 1¼ inch, height = ¾ inch) was placed on the stripped area and was firmly pressed to the skin so that the alcohol mixture would not leak out. Two milliliters of the alcohol mixture was added into the glass ring. The mixture in the glass ring was gently stirred with a glass rod for 2 minutes. Then, the alcohol mixture  
20        was removed by aspiration using a pipette. The alcohol mixture treatment was repeated once, i.e., applying 2 milliliter alcohol mixture to the skin, stirring for 2 minutes, and removing the mixture with a pipette. Afterwards, Panolog Cream<sup>®</sup> was applied on the treated area. Panolog Cream<sup>®</sup> is a commercial product used in veterinary medicine to treat skin  
25        lesions. It contains nystatin, neomycin sulfate, thiostrepton and triamcinolone acetonide in the base mixture. Using Panolog Cream<sup>®</sup> alone in the affected area did not induce hair re-growth in dogs.

30        Thirty-six Beagles were treated with the method described above. They were treated six times in total, once every four weeks. Twenty-eight

dogs showed positive response in that hair regrew in the treated area. The hair re-growth occurred only in the alcohol mixture treated area but not in the adjacent area in some dogs. In other dogs, hair was longer in the treated area than those in the adjacent area, indicating the hair in the

5 treated area were either entering into anagen earlier and/or had a greater hair growth rate. Neither tape stripping alone nor Panolog Cream® alone caused hair re-growth when used without alcohol treatment.